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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION IV

IN THE MATTER OF: Firestone Tire & Rubber Company Albany, Georgia Bridgestone/Firestone, Inc. Respondent.	Proceeding under Sections 104, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 as amended, 42 U.S.C. §§ 9604 and 9622 EPA Docket No.: 90-48-C

ADMINISTRATIVE ORDER BY CONSENT FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY

I. JURISDICTION

This Administrative Order by Consent (Consent Order) is entered into by the United States Environmental Protection Agency (EPA) with Bridgestone/Firestone, Inc. (formerly Firestone Tire & Rubber Company) (Respondent) pursuant to the authority vested in the President of the United States by Sections 104, 122(a) and 122(d)(3) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), as amended, 42 U.S.C. §§ 9604, 9622(a) and 9622(d)(3). This authority was delegated by the President to the Administrator of the EPA by Exec. Order No. 12580, dated January 23, 1987, 52 Fed. Reg. 2923 (Jan. 29, 1987), and was further delegated to the Regional Administrator of Region IV EPA and redelegated to the Director, Waste Management Division.

Respondent agrees to undertake all actions required by the terms and conditions of this Consent Order for the conduct and implementation of the Remedial Investigation and Feasibility Study (RI/FS). The Respondent consents to and will not contest EPA jurisdiction regarding this Order. Respondent neither admits nor denies any EPA Finding of Fact, EPA Conclusion of Law or EPA Determination contained in this Consent Order. No act committed in compliance with this Consent Order constitutes an admission by Respondent of any EPA Finding of Fact, EPA Conclusion of Law, or EPA Determination contained in this Consent Order.

II. PARTIES BOUND

This Consent Order applies to and is binding upon EPA and the Respondent, its agents, successors, assigns, officers, directors, and principals. Respondent is liable for carrying out all actions required of it by this Consent Order.

The signatories to this Consent Order certify that they are authorized to execute and legally bind the parties they represent to this Consent Order. No change in the ownership or corporate status of the Respondent shall alter its responsibilities under this Consent Order.

The Respondent shall provide a copy of this Consent Order to any subsequent owners or successors before ownership rights are transferred. The Respondent shall provide a copy of this Consent Order to all contractors, subcontractors, laboratories, and consultants which are retained to conduct any work performed under this Consent Order, within fourteen (14) days after the effective date of this Consent Order or the date of retaining their services, whichever is later. Respondent shall condition any such contracts upon satisfactory compliance with this Consent Order. Notwithstanding the terms of any contract, Respondent is responsible for compliance with this Consent Order and for ensuring that its subsidiaries, employees, contractors, consultants, subcontractors and agents comply with this Consent Order.

III. STATEMENT OF PURPOSE

In entering into this Consent Order, the mutual objectives of EPA and Respondent are: (A) with respect to the Remedial Investigation (RI), to determine fully the nature and extent of the threat to the public health or welfare or the environment caused by the release or threatened release of hazardous substances, pollutants, or contaminants at or from the Site into the environment; and (B) with respect to the Feasibility Study (FS), to develop and evaluate alternatives for remedial action to prevent, mitigate or otherwise respond to the migration or the release or threatened release of hazardous substances, pollutants, or contaminants from the Site; and (C) to recover response and oversight costs incurred by EPA with respect to this consent order.

The activities conducted pursuant to this Consent Order will be consistent with the National Contingency Plan (NCP), 40 C.F.R. Part 300, et seq., and will be subject to the express EPA approvals as set forth below.

IV. EPA FINDINGS OF FACTS

The following constitutes an outline of the facts upon which this Consent Order is based:

A. The facility is a 329.2 acre site at 3300 Sylvester Road

in Albany, Dougherty County, Georgia (the Site). From 1968 to 1986, the Respondent leased the Site and manufactured tires at the Site. In 1986, the Respondent ceased operations at the Site. The Site remained inactive until May 1990, at which time Cooper Tire & Rubber purchased the Respondent's leasehold and began renovations for future operations at the Site.

B. As part of the tire manufacturing process, the Respondent generated a waste rubber cement. This waste rubber cement is known to have contained naphtha and 1,1,1-trichlorethane.

C. The Respondent stored drums of the waste on the bare ground. Wastes spilled from these drums onto the ground. In addition, on at least one occasion, the Respondent burned wastes in a trench on the site, and later backfilled the trench.

D. The Georgia Environmental Protection Division conducted sampling at the site on February 11, 1985 and on February 18, 1986, a consultant to Respondent conducted sampling at the Site. Hazardous substances detected on the site during these sampling events include benzene, 1,1 dichloroethylene, 1,1-dichloroethane, toluene, 1,1,1-trichloroethane and zinc. Since 1985, Respondent has been conducting extensive investigation of environmental conditions at the Site and has voluntarily performed interim remedial measures to respond to conditions it uncovered.

E. The site was listed on the National Priority List, as defined in Section 105 of CERCLA, as amended, (42 U.S.C. § 9605), in October, 1989.

F. Potential pathways for contamination include surface water runoff and infiltration into the groundwater. The site is drained by several ditches that lead to a process water drainage basin. This basin then discharges, via a series of canals, to the Flint River. The hazardous substances described above were detected in groundwater samples. The acquifer of concern is the Principal Artesian Acquifer (PAA).

G. The PAA is used as a source of drinking water and irrigation water. An estimated 400 people obtain drinking water from private wells within three (3) miles of the site. Approximately 1000 acres of cropland are irrigated by water from the PAA.

V. EPA CONCLUSIONS OF LAW

A. The Site is a facility within the meaning of Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

B. The Respondent is a person as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

C. The Respondent is a responsible party under Section 107(a) of CERCLA, 42 U.S.C. § 9607(a).

D. Contaminants found at the Site as described in Section IV above are hazardous substances within the meaning of Section 101(14) of CERCLA, 42 U.S.C. § 9601(14), or constitute a pollutant or contaminant that may present an imminent and substantial danger to the public health or welfare under Section 104(a)(1) of CERCLA, 42 U.S.C. 9604(a)(1).

E. The hazardous substances described have been released into the environment and its potential migration pathways constitute both an actual release and threatened release within the meaning of Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

VI. EPA DETERMINATIONS

Based on the Findings of Fact and Conclusions of Law set out above, EPA has determined that:

A. The actual and/or threatened release of hazardous substances from the Site may present an imminent and substantial endangerment to the public health or welfare or the environment.

B. The actions required by this Consent Order are necessary to protect the public health and/or welfare and/or the environment.

C. In accordance with Section 104(a)(1) of CERCLA, 42 U.S.C. § 9604(a)(1), EPA has determined that the work to be performed pursuant to this Consent Order, if performed according to the terms of this Order, will be done properly and promptly by the Respondent. EPA has also determined that the Respondent is qualified to conduct such work.

VII. WORK TO BE PERFORMED

All aspects of the Work to be performed by Respondent pursuant to this Consent Order shall be under the direction and supervision of a qualified contractor who shall be a qualified professional engineer or geologist with expertise in hazardous site cleanup, the selection of which shall be subject to approval by EPA. Within fifteen (15) days after the effective date of this Consent Order, Respondent shall submit to EPA in writing the name, title, and qualifications of any supervising contractor proposed to be used in carrying out the RI/FS to be performed pursuant to this Consent Order. Respondent shall also advise EPA of the name, title, and qualifications of the contractor proposed to be used in carrying out the risk assessment portion of the RI/FS. EPA shall notify the

Respondent of its approval or disapproval in writing, within twenty (20) calendar days of its receipt of this submission by the Respondent. If EPA notifies Respondent that EPA disapproves of the selection of any contractor, Respondent shall submit a list of alternate contractors to EPA within twenty (20) days of receipt of EPA's notice of disapproval of the contractor previously selected. EPA shall, within twenty (20) calendar days of receipt of the list, provide written notice of the names of the contractors that it approves. The Respondent may at its election select any one from that list. Respondent shall notify EPA of the name of the contractor selected within fifteen (15) calendar days of receipt of EPA's notice of the approved contractors.

If, at any time thereafter, Respondent proposes to change any contractor, Respondent shall give written notice to EPA and shall obtain approval from EPA before the new contractor performs any work under this Consent Order.

Based on the foregoing, it is hereby AGREED TO AND ORDERED that the following work will be performed:

A. Within ninety (90) calendar days of the effective date of this Consent Order, Respondent shall submit to EPA a RI/FS Scoping Document (Scoping Document) which conforms to the requirements set forth in a Statement of Work (SOW) (Attachment 1) which is hereby made a part of this Consent Order as if fully set forth herein. As noted in the EPA Findings of Fact, Respondent has conducted sampling and investigatory activities and performed interim remedial measures at the Site. The Scoping Document shall summarize results of all prior field activities and remedial measures conducted by Respondent and include a description of the work performed, the media investigated and field and laboratory test results and conclusions. Laboratory test data shall be supported by laboratory QA/QC summary reports.

B. Because EPA was not involved in the prior work, did not review any sampling or work plan for field activities or other plans prior to implementation and was not present during the implementation, EPA will review the information submitted in the Scoping Document and will determine if, and to what extent, such information will satisfy a task, deliverable and/or other requirement under this Consent Order. EPA will provide Respondent with writen notice of these determinations, and shall include in said notice comments on any information submitted in the Scoping Document and not accepted by EPA. In connection with making such determinations, EPA may require verification sampling and/or additional sampling following EPA protocols and

the SOW, with the results of such sampling being submitted to EPA for review.

C. Within forty-five (45) calendar days of receipt of the EPA's determinations in regard to the information submitted in the Scoping Document, Respondent shall submit to EPA a plan for a complete Remedial Invesigation and Feasibility Study (RI/FS). This RI/FS work plan shall incorporate information submitted in the Scoping Document and accepted by EPA pursuant to paragraphs A and B above. The RI/FS Work Plan shall be developed and submitted in conjunction with a Sampling and Analysis Plan and a Health and Safety Plan, although each plan may be delivered under separate cover. These plans shall be developed in accordance with the National Contingency Plan and the attached SOW. The RI/FS Work Plan shall include a comprehensive description of the work to be performed, the media to be investigated (i.e., air, groundwater, surface water, surface and subsurface soils and sediments, etc.), the methodologies to be utilized, and the rationale for the selection of each methodology. A comprehensive schedule for completion of each major activity required by this Consent Order and including the submission of each deliverable listed in the RI/FS Scope of Work shall also be included. Such schedule shall reflect submittal of the Draft Feasibility Study within 400 calendar days of the effective date of this Consent Order.

The Sampling and Analysis Plan (SAP) shall include procedures to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data generated will meet the Data Quality Objectives (DQOs) established. The SAP provides a mechanism for planning field activities and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used on the project. It shall include sample objectives, sample location (horizontal and vertical) and frequency, sampling equipment and procedures, and sample handling and analysis. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs.

A Health and Safety Plan shall be prepared in conformance with the Respondent's health and safety program and OSHA regulations and protocols.

D. Respondent will implement the RI/FS Work Plan approved by EPA. The EPA approved RI/FS Work Plan and any EPA approved amendments thereto will be attached to and incorporated in this Consent Order as Attachment 2. The RI/FS will be conducted in accordance with the schedule contained in the RI/FS Work Plan as approved by EPA.

E. Within seven (7) calendar days of the approval of the RI/FS Work Plan by EPA, Respondent will commence work on Task 1 of the RI/FS Work Plan.

F. Respondent shall submit to EPA written monthly progress reports which: (1) describe the actions which have been taken toward achieving compliance with this Consent Order during the previous month: (2) include all results of sampling and tests and all other data received by Respondent during the course of the work; (3) include all plans and procedures completed under the Work Plan during the previous month; (4) describe all actions, data, and plans which are scheduled for the next month, and provide other information relating to the progress of the work as deemed necessary by EPA; and (5) include information regarding percentage of completion, unresolved delays, encountered or anticipated, that may affect the future schedule for implementation of the Scope of Work and/or RI/FS Work Plans, and a description of efforts made to mitigate those delays or anticipated delays. These progress reports are to be submitted to EPA by the fifth day of every month following the effective date of this Consent Order.

G. Deliverables, including reports, plans or other correspondence to be submitted pursuant to this Consent Order, shall be sent by regular certified mail, express mail or overnight delivery to the following addresses or to such other addresses as the EPA hereafter may designate in writing.

Charles L. King Jr.
Remedial Project Manager
EPA - Region IV
Waste Management Division
345 Courtland Street, N.E.
Atlanta, Georgia 30365

The number of copies to be submitted to EPA for each deliverable is identified in the RI/FS Scope of Work.

For informational purposes documents (two copies) shall be sent to:

Jennifer Kaduck
Georgia Department Of Natural Resources
Floyd Towers East, Room 1154
205 Butler Street, S.E.
Atlanta, GA 30334

Documents to be submitted to the Respondent's Project Coordinator should be sent to:

E.H. Hurst
Bridgestone/Firestone, Inc.
1200 Firestone Parkway
Akron, OH 44317

H. EPA may determine that other tasks, including remedial investigatory work and/or engineering evaluation, are necessary as part of an RI/FS in addition to EPA-approved tasks and deliverables, including reports, which have been completed pursuant to this Consent Order. Should EPA determine that such additional tasks are necessary, EPA shall notify Respondent. Within fifteen (15) days of receipt of notification by Respondent, Respondent shall advise EPA of Respondent's intention in regard to the additional work. Upon written agreement of the parties hereto, this Consent Order may be modified as necessary to address such further investigation or evaluation. Should Respondent not agree to the inclusion of these tasks, EPA retains the right to perform additional work as authorized by CERCLA and seek to recover its costs against any person, including Respondent. Respondent shall not be subject to stipulated penalties under this Consent Order for failure to perform tasks not included in the RI/FS Work Plan. No determination by EPA that additional tasks are necessary shall be subject to dispute resolution.

VIII. SUBMISSIONS REQUIRING AGENCY APPROVAL

A. EPA reserves the right to comment on, modify and direct changes for all deliverables. Upon receipt of any plan, report or other item which is required to be submitted for approval pursuant to this Consent Order, EPA shall notify the Respondent that EPA either: (1) approves the submission; or (2) disapproves the submission, notifying Respondent of deficiencies. If such submission is disapproved, EPA shall either: (1) notify the Respondent that EPA will modify the submission to cure the deficiencies; or (2) direct the Respondent to modify the submission to cure the deficiencies.

B. Upon receipt of a written notice of disapproval and notification directing modification of the submission, Respondent shall, within thirty (30) days, cure the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval, Respondent shall, to the extent practicable, proceed to take any action required by any nondeficient portion of the submission.

C. Upon receipt of a notice of approval or modification of the submittal by EPA, Respondent shall proceed to take any action required by the plan, report, or other item, as approved or modified.

D. If, after resubmission, EPA disapproves the plan, report, or item, Respondent shall be deemed to be in violation of this Consent Order and stipulated penalties shall begin to accrue pursuant to Section XVI of this Consent Order. EPA retains the right to seek stipulated or statutory penalties, to require the amendment of the document, to perform additional studies, to conduct a complete RI/FS pursuant to its authority under CERCLA, and to take any other action, including, but not limited to, enforcement action to recover its costs pursuant to its authority under CERCLA.

E. Neither failure of EPA to expressly approve or disapprove of Respondent's deliverables within a specified time period, nor the absence of comments, shall be construed as approval by EPA. Respondent is responsible for preparing and submitting deliverables acceptable to EPA.

F. Upon a timely request of EPA, Respondent agrees to be reasonably available to make presentations at, and participate in, meetings at the request of EPA during the initiation, conduct and completion of the RI/FS. In addition to the discussion of the technical aspects of the RI/FS, topics will include anticipated problems or new issues. Meetings will be scheduled at EPA's discretion.

G. The provisions of this Consent Order shall govern all proceedings regarding the RI/FS work conducted pursuant to this Consent Order. In the event of any inconsistency between this Consent Order and any required deliverable submitted by Respondent, the inconsistency will be resolved in favor of this Consent Order.

IX. DESIGNATED PROJECT COORDINATORS

A. On or before the effective date of this Consent Order, EPA and Respondent will each designate a Project Coordinator and an Alternate Project Coordinator. The "Project Coordinator" for EPA will be the Remedial Project Manager (RPM) or the On-Scene

Coordinator (OSC) responsible for this Site. Each Project Coordinator will be responsible for overseeing the implementation of this Consent Order. The EPA Project Coordinator will be EPA's designated representative at the Site. To the maximum extent possible, communications between Respondent and EPA, including all documents, reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Order, will be directed through the Project Coordinators.

B. EPA and Respondent each have the right to change their respective Project Coordinator. Such a change will be accomplished by notifying the other party in writing at least five (5) calendar days prior to the change.

C. The EPA designated Project Coordinator will have the authority vested in an RPM or OSC by the National Contingency Plan, 40 C.F.R. Part 300, as amended. This includes the authority to halt, conduct, or direct any work required by this Consent Order, or any response actions or portions thereof when he or she determines that conditions may present an immediate risk to public health or welfare or the environment.

D. The absence of the EPA Project Coordinator from the Site shall not be cause for the stoppage or delay of work.

E. EPA shall arrange for a qualified person to assist in its oversight and review of the conduct of the RI/FS, as required by Section 104(a) of CERCLA, 42 U.S.C. 9604(a). The oversight assistant may observe work and make inquiries in the absence of EPA, but is not authorized to modify the work plan.

X. QUALITY ASSURANCE, SAMPLING AND DATA ANALYSIS

A. Respondent shall use quality assurance, quality control, and chain of custody procedures in accordance with EPA's "Interim Guidelines and Specifications For Preparing Quality Assurance Project Plans" (QAMS-005/80) and the "EPA Region IV Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual (U.S. EPA Region IV, Environmental Services Division, April 1, 1986), and subsequent amendments to such guidelines. Prior to the commencement of any monitoring project under this Consent Order, Respondent shall submit for review, modification and/or approval by EPA, a Quality Assurance Project Plan ("QAPP") that is consistent with applicable guidelines. Sampling data generated consistent with the QAPP(s) shall be admissible as evidence, without objection, in any proceeding under Section XIII of this Order. Respondent shall assure that EPA personnel or authorized representatives are allowed access to any laboratory utilized by Respondent in implementing this Consent Order.

B. Respondent shall make available to EPA the results of all sampling and/or tests or other data generated by Respondent with respect to the implementation of this Consent Order and shall submit these results in monthly progress reports as described in Section VII.H. of this Consent Order.

C. At the request of EPA, Respondent shall allow split or duplicate samples to be taken by EPA, and/or their authorized representative, of any samples collected by Respondent pursuant to the implementation of this Consent Order. Respondent shall notify EPA not less than fourteen (14) days in advance of any sample collection activity. In addition, EPA shall have the right to collect any additional samples that EPA deems necessary.

D. Respondent shall ensure that the laboratory utilized by Respondent for analyses participates in a EPA quality assurance/quality control program equivalent to that which is followed by EPA and which is consistent with EPA document QAMS-005/80. In addition, EPA may require submittal of data packages equivalent to those generated in the EPA Contract Laboratory Program (CLP) and may require laboratory analysis of performance samples (blank and/or spike samples) in sufficient number to determine the capabilities of the laboratory.

E. Notwithstanding any provision of this Consent Order, the EPA hereby retains all of its information gathering, inspection and enforcement authorities and rights under CERCLA, RCRA, and any other applicable statute or regulation.

XI. ACCESS

A. From the date of execution of this Consent Order until EPA provides written notice of satisfaction of the terms of the Order, the EPA and its authorized representatives and agents shall have access at all reasonable times to the Site and any property to which access is required for the implementation of this Consent Order, to the extent access to the property is controlled by or available to Respondent, for the purposes of conducting any activity authorized by or related to this Consent Order, including, but not limited to:

1. Monitoring the RI/FS work or any other activities taking place on the property;

2. Verifying any data or information submitted to the United States;

3. Conducting investigations relating to contamination at or near the Site;

4. Obtaining samples;

5. Evaluating the need for or planning and implementing additional remedial or response actions at or near the Site; and

6. Inspecting and copying records, operating logs, contracts, or other documents required to assess Respondent's compliance with this Consent Order.

B. To the extent that the Site or any other area where work is to be performed under this Consent Order is owned or controlled by persons other than Respondent, Respondent shall use its best efforts to secure from such persons access for Respondent, as well as for EPA and authorized representatives or agents of EPA, as necessary to effectuate this Consent Order. Copies of such access agreements will be provided to EPA prior to Respondent's initiation of field activities. If access is not obtained within thirty (30) days of the effective date of this Consent Order, Respondent shall promptly notify the EPA. The United States may thereafter assist Respondent in obtaining access. Respondent shall, in accordance with Section XVII herein, reimburse the United States for all costs incurred by it in obtaining access, including but not limited to, attorneys' fees and the amount of just compensation and costs incurred by the United States in obtaining access.

C. Notwithstanding any provision of this Consent Order, the EPA retains all of its access authorities and rights under CERCLA, RCRA and any other applicable statute or regulations.

XII. CONFIDENTIALITY OF SUBMISSIONS

A. Respondent may assert a confidentiality claim, covering part or all of the information requested by this Consent Order pursuant to 40 C.F.R. § 2.203(b). Such an assertion will be adequately substantiated when the assertion is made. Analytical data will not be claimed as confidential by Respondent. Information determined to be confidential by EPA will be afforded the protection specified in 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to Respondent.

B. In any suit brought by EPA, Respondent waives any objection to the authenticity of the results of any analyses of sampling conducted by or for them at the Site or of other data gathered pursuant to this Consent Order that has been verified by the quality assurance/quality control procedures established pursuant to Section X.

XIII. RECORD PRESERVATION

EPA and Respondent agree that each will preserve, during the pendency of this Consent Order and for a minimum of six (6) years after its termination, all records and documents in their possession or in the possession of their divisions, employees, agents, accountants, contractors, or attorneys which relate in any way to the Site, despite any document retention policy to the contrary. After this six year period, Respondent will notify EPA in writing within ninety (90) calendar days prior to the destruction of any such documents. Upon request by EPA, prior to the date of destruction, Respondent will make available to EPA such records or copies of any such records. Additionally, if EPA requests that documents be preserved for a longer period of time, Respondent will comply with that request, or shall provide the records to EPA.

XIV. DISPUTE RESOLUTION

Any disputes arising under this Consent Order shall be resolved as follows: If the Respondent objects to any EPA notice of disapproval or decision made pursuant to this Consent Order, the Respondent shall notify EPA's Project Coordinator in writing of its objections within 14 calendar days after receipt of the decision. Respondent's written objections shall define the dispute, state the basis of Respondent's objections, and be sent certified mail, return receipt requested. EPA and the Respondent then have an additional fourteen (14) calendar days to reach agreement. If agreement cannot be reached within fourteen (14) calendar day period, the EPA Waste Management Division Director shall provide a written statement of the decision and the reasons supporting that decision to Respondent. The Division Director's determination is EPA's final decision. If Respondent does not agree to perform or does not actually perform the task in dispute as determined by EPA's Division Director, EPA reserves the right to conduct the work itself, to seek reimbursement from the Respondent, and/or to seek other appropriate relief.

Respondent is not relieved of its obligations to perform and conduct any undisputed tasks required by this Consent Order while a matter is pending in dispute resolution.

XV. FORCE MAJEURE

A. "Force Majeure" is defined for the purposes of the Consent Order as an event arising from causes entirely beyond the control of Respondent and of any entity controlled by Respondent including its contractors and subcontractors, which could not have been overcome by due diligence which delays or

prevents the performance of any obligation under this Consent Order. Examples of events which may constitute force majeure events include, but are not limited to, extraordinary weather events, natural disasters, and national emergencies. Examples of events that are not force majeure events include, but are not limited to, normal inclement weather, increased costs or expenses of the Work to be performed under this Consent Order, the financial difficulty of Respondent to perform such tasks, the failure of Respondent to satisfy its obligation under this Consent Order, acts or omissions not otherwise force majeure attributable to Respondent's contractors or representatives, and the failure of Respondent's contractors or representatives to make complete and timely application for any required approval or permit.

B. When circumstances occur which may delay or prevent the completion of any phase of the Work Plan or access to the Site or to any property on which part of the Work Plan is to be performed, whether or not caused by a force majeure event, Respondent shall notify the EPA Project Coordinator orally of the circumstances within forty-eight (48) hours of when Respondent first knew or should have known that the event might cause delay. If the EPA Project Coordinator is unavailable, Respondent shall notify the designated alternate or the Director of the Waste Management Division, EPA Region IV. Within seven (7) calendar days after Respondent first became aware of such circumstances, Respondent shall supply to EPA in writing: (1) the reasons for the delay; (2) the anticipated duration of the delay; (3) all actions taken or to be taken to prevent or minimize the delay; (4) a schedule for implementation of any measures to be taken to mitigate the effect of the delay; and (5) a statement as to whether, in the opinion of the Respondent, such event may cause or contribute to an endangerment to public health, welfare, or the environment. Respondent shall exercise best efforts to avoid or minimize any delay and any effects of a delay. Failure to comply with the above requirements shall preclude Respondent from asserting any claim of force majeure.

C. If EPA agrees that a delay is or was caused by a force majeure event, the time for performance of the obligations under this Consent Order that are directly affected by the force majeure event shall be extended by agreement of the parties, pursuant to Section XXIII, for a period of time not to exceed the actual duration of the delay caused by the force majeure event. An extension of the time for performance of the obligation directly affected by the force majeure event shall not necessarily justify an extension of time for performance of any subsequent obligation.

D. If EPA does not agree that the delay or anticipated delay has been or will be caused by a force majeure event, or does not agree with Respondent on the length of the extension, the issue shall be subject to the dispute resolution procedures

set forth in Section XIV of the Consent Order. In any such proceedings, to qualify for a force majeure defense, Respondent shall have the burden of proof that the delay or anticipated delay was or will be caused by a force majeure event, that the duration of the delay was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Respondent complied with the requirements of paragraph B of this Section. Should Respondent carry this burden, the delay at issue shall be deemed not to be a violation by Respondent of the affected obligation of the Consent Order.

XVI. STIPULATED PENALTIES

Unless excused under the provisions of Sections XIV or XV, the Respondent shall pay into the Hazardous Substance Superfund administered by EPA, the sums set forth below as stipulated penalties.

Stipulated penalties shall accrue as follows:

A. For each day during which Respondent fails to perform, in accordance with the schedules contained in this Consent Order and in the various plans and reports required under this Consent Order incorporated by reference herein, any of the following activities:

1. submittal and, if necessary, modification of the draft and final RI/FS Work Plan and Sampling and Analysis Plan;

2. submittal and, if necessary, modification of the draft and final RI Report;

3. submittal and if necessary, modification of the draft and final Baseline Risk Assessment memoranda;

4. submittal and, if necessary, modification of the draft and final FS Report; and

5. payment of oversight costs as provided in Section XVII;

Respondent shall be liable to EPA for stipulated penalties in the following amounts:

Period of Failure to Comply	Penalty Per Violation Per Day
1st through 14th day	$750
15th through 44th day	$1,000
45th day and beyond	$3,000

B. If Respondent fails to submit a monthly progress report or a requested modification by its due date, Respondent shall be liable to EPA for stipulated penalties in the amount of $1000 per violation for each day during which Respondent fails to submit or modify monthly reports.

C. Respondent shall be liable to EPA for stipulated penalties in the amount of $400 per violation for each day during which Respondent fails to comply with all other requirements of this Consent Order including, but not limited to, any implementation schedule, payment requirement, notification requirement or completion deadline.

All stipulated penalties begin to accrue on the day the violation occurs or on the day following Respondent's failure to comply with any schedule or deadline or the terms, conditions, or requirements contained in this Consent Order and/or Work Plan. Stipulated penalties shall continue to accrue until Respondent's violation ends or until Respondent complies with the particular schedule or deadline.

Payment of stipulated penalties shall be due and owing within thirty (30) days from the receipt of a written notice from EPA notifying Respondent that penalties have been assessed. This notice of stipulated penalties shall detail the violations for which the penalties are being assessed as well as the amount of the penalties and the dates for which the penalties are being assessed. Interest shall accrue on any unpaid amounts, beginning at the end of the thirty (30) day period, at the rate established by the Department of Treasury under 31 U.S.C. § 3717. Respondent shall pay a handling charge of one percent to be assessed at the end of each 31 day period, and a six percent per annum penalty charge, to be assessed if the penalty is not paid in full within 90 days after it is due. The check and transmitted letter shall identify the Name of the Site, the Site identification number and the title of this Order. A copy of the transmittal letter should be sent simultaneously to the EPA Project Coordinator.

Payment shall be made to:

U. S. Environmental Protection Agency
Region IV
Superfund Accounting
P. O. Box 100142
Atlanta, Georgia 30384
ATTENTION: (Collection Officer for Superfund)

Respondent may dispute EPA's right to the stated amount of penalties by invoking the Dispute Resolution procedures under Section XIV of this Order. Penalties shall accrue but need not be paid during the dispute resolution period. If Respondent

does not prevail upon resolution, all penalties shall be due to EPA within 30 days of resolution of the dispute. If Respondent prevails upon resolution, no penalties shall be paid.

In the event that EPA provides for corrections to be reflected in the next deliverable and does not require resubmission of that deliverable, stipulated penalties for that interim deliverable shall not accrue.

Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Consent Order.

The stipulated penalties set forth in this Section do not preclude EPA from electing to pursue any other remedies or sanctions which may be available to EPA by reason of the Respondent's failure to comply with any of the requirements of this Consent Order. Such remedies and sanctions may include a suit for statutory penalties up to the amount authorized by law, a federally-funded response action, and a suit for reimbursement of costs incurred by the United States.

The EPA may, it its sole unreviewable discretion, forgive stipulated penalties assessed under the Consent Order. The decision to forgive, or not forgive, stipulated penalties shall not be subject to dispute resolution.

XVII. REIMBURSEMENT OF OVERSIGHT AND RESPONSE COSTS

In accordance with Section 104(a)(1) of CERCLA, as amended, 42 U.S.C. § 9604(a)(1), Respondent agrees to reimburse the Hazardous Substance Superfund for all response and oversight costs incurred by EPA or its authorized representatives in oversight of Respondent's performance of work under the Consent Order.

At the end of each fiscal year, EPA will submit to Respondent an accounting of all response and oversight costs incurred by the U.S. Government with respect to this Consent Order. Oversight costs shall include all direct and indirect costs of EPA's oversight arrangement for the RI/FS, including, but not limited to, time and travel costs of EPA personnel and associated indirect costs, contractor costs, compliance monitoring, including the collection and analysis of split samples, inspection of RI/FS activities, site visits, interpretation of Consent Order provisions, discussions regarding disputes that may arise as a result of this Consent Order, review and approval or disapproval of reports, the costs of redoing any of Respondent's tasks, and any assessed interest.

EPA's certified Agency Financial Management System Summary data (SPUR Reports) and any other necessary documents, shall serve as the basis for payment demands.

Failure to submit an accounting in one fiscal year does not prevent EPA from submitting an accounting for that year in a subsequent fiscal year. Respondent shall, within thirty (30) calendar days of receipt of each accounting, remit a certified or cashiers check for the amount of those costs made payable to the Hazardous Substance Superfund. Interest shall begin to accrue on the unpaid balance from that date. Checks should specifically reference the identity of the Site and should be sent to:

U. S. Environmental Protection Agency
Region IV
Superfund Accounting
P. O. Box 100142
Atlanta, Georgia 30384
ATTENTION: Collection Officer for Superfund

A copy of the transmittal letter should be sent simultaneously to the EPA Project Coordinator.

Respondent agrees to limit any disputes concerning costs to accounting errors and the inclusion of costs outside the scope of this Consent Order and costs inconsistent with the NCP. Respondent shall identify any contested costs and the basis of its objection. All undisputed costs shall be remitted by Respondent in accordance with the schedule and procedure set out above. Disputed costs shall be paid by Respondent into an escrow account while the dispute is pending. If Respondent identifies contested costs and timely remit payment of those contested costs to an escrow account, no stipulated penalties shall accrue for nonpayment of those contested costs during the period the dispute is pending. Respondent bears the burden of establishing an EPA accounting error and the inclusion of costs outside the scope of this Consent Order.

EPA reserves the right to bring an action against the Respondent pursuant to Section 107 of CERCLA to enforce the response and oversight cost reimbursement requirements of this Consent Order and to collect stipulated penalties assessed pursuant to section XVI of this Consent Order.

XVIII. RESERVATION OF RIGHTS

Notwithstanding compliance with the terms of this Consent Order, the Respondent is not released from liability, if any, for any actions beyond the terms of this Consent Order taken by EPA regarding this Site. EPA reserves the right to take any

enforcement action pursuant to CERCLA or any other available legal authority, including the right to seek injunctive relief, monetary penalties, and punitive damages for any violation of law or this Consent Order.

Except as otherwise provided herein, EPA and Respondent expressly reserve all rights and defenses that they may have, including EPA's right both to disapprove of work performed by Respondent and to require that Respondent performs tasks in addition to those detailed in the RI/FS Work Plan, as provided in this Consent Order. In the event that Respondent declines to perform any additional or modified tasks, EPA will have the right to undertake any RI/FS work. In addition, EPA reserves the right to undertake removal actions and/or remedial actions at any time. In either event, EPA reserves the right to seek reimbursement from Respondent thereafter for such costs which are incurred by the United States and Respondent reserves all rights to contest or defend against such claims or actions.

Following satisfaction of the requirements of this Consent Order, Respondent shall have resolved its liability to EPA for the performance of the RI/FS that is the subject of this Order. The Respondent is not released from liability, if any, for any actions taken beyond the terms of this Order regarding removals, other operable units, remedial design/remedial action (RD/RA), or activities arising pursuant to section 121(c) of CERCLA.

XIX. OTHER CLAIMS

Nothing in this Consent Order constitutes a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, or corporation for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site.

EPA reserves the right to bring an action against Respondent pursuant to Section 107 of CERCLA for recovery of all response and oversight costs incurred by the United States related to this Consent Order and not reimbursed by Respondent, as well as any other past and future costs incurred by the United States in connection with response activities conducted pursuant to CERCLA at this site. Respondent reserves the right to contest such an action.

This Consent Order does not constitute a preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2).

In entering into this Consent Order, Respondent waives any right to seek reimbursement under Section 106(b)(2) of CERCLA, 42 U.S.C. § 9606(b)(2), for any past costs associated with this Site, or any costs incurred in complying with this Order.

Respondent shall bear their own costs and attorney fees.

XX. OTHER APPLICABLE LAWS

All actions required to be taken pursuant to this Consent Order will be undertaken in accordance with the requirements of all applicable local, state, and federal laws and regulations unless an exemption from such requirements is specifically provided in this Consent Order, or made a part of this Consent Order by being incorporated herein at some later date.

XXI. INDEMNIFICATION OF THE UNITED STATES GOVERNMENT

Respondent agrees to indemnify and save and hold harmless the United States, its agencies, departments, officials, agents, employees, contractors, or representative, from any and all claims or causes of action arising from or on account of acts or omissions of Respondent, its officers, employees, receivers, trustees, agents, or assigns, in carrying out the activities pursuant to this Consent Order. The United States Government or any agency or authorized representative thereof shall not be held to be a party to any contract involving Respondent at or relating to the Site.

XXII. PUBLIC COMMENT

Upon submittal to EPA of the Feasibility Study Final Report, EPA will make both the Remedial Investigation Final Report and the Feasibility Study Final Report and EPA's Proposed Plan available to the public for review and comment for, at a minimum, a thirty (30) day period, pursuant to EPA's Community Relations Plan and the NCP. Following the public review and comment period, EPA will notify Respondent of the remedial action alternative selected for the Site.

XXIII. EFFECTIVE DATE AND SUBSEQUENT MODIFICATION

In consideration of the communications between Respondent and EPA prior to the issuance of this Consent Order concerning its terms, Respondent agrees that there is no need for a settlement conference prior to the effective date of this Consent Order. Therefore, the effective date of this Consent Order will be the date on which it is signed by EPA. EPA will use its best efforts

to give telephonic notice to Respondent on the date this Consent Order is signed. This Consent Order may be amended by mutual agreement of EPA and Respondent. Such amendments will be in writing and will have, as the effective date, that date on which such amendments are signed by EPA. EPA Project Coordinators do not have the authority to sign amendments to the Consent Order.

Any reports, plans, specifications, schedules, and attachments required by this Consent Order are, upon approval by EPA, incorporated into this Consent Order. Any noncompliance with such EPA approved reports, plans, specifications, schedules, and attachments will be considered a failure to achieve the requirements of this Consent Order and will subject the Respondent to the provisions included in the "Force Majeure" and "Stipulated Penalties" sections (Sections XV and XVI) of this Consent Order.

No informal advice, guidance, suggestions, or comments by EPA regarding reports, plans, specifications, schedules, and any other writing submitted by Respondent will be construed as relieving Respondent of its obligation to obtain such formal approval of EPA as may be required by this Consent Order.

XXIV. NOTICE TO THE STATE

EPA has notified the State of Georgia regarding the requirements of this Consent Order.

Upon completion of the RI/FS, pursuant to the requirements of Section 104(c)(2) of CERCLA, 42 U.S.C. § 9604(c)(2), EPA will notify the State of Georgia before determining the appropriate remedial action to be taken at the Site.

XXV. TERMINATION AND SATISFACTION

This Consent Order shall terminate when the Respondent demonstrates in writing and certifies to the satisfaction of EPA that all activities required under this Consent Order, including any additional work, payment of past costs, response and oversight costs, and any stipulated penalties demanded by EPA, have been performed and EPA has approved the certification. This notice shall not, however, terminate Respondent's obligation to comply with Sections XIII, XVII, and XVIII of this Consent Order.

The certification shall be signed by a responsible official representing Respondent. The representative shall make the following attestation: "I certify that the information contained in or accompanying this certification is true, accurate, and complete." For purposes of this Consent Order, a responsible official is a corporate official who is in charge of a principal business function.

IT IS SO AGREED:

BY: _____ 6/29/90
Bridgestone/Firestone, Inc. Date

IT IS SO AGREED AND ORDERED:

BY: Patrick M Tobin 7-9-90
Patrick M. Tobin Date
Director, Waste Management Division
Region IV
U.S. Environmental Protection Agency

SCOPE OF WORK FOR THE
REMEDIAL INVESTIGATION AND FEASIBILITY STUDY
AT THE FIRESTONE TIRE & RUBBER CO. SITE

The purpose of this Remedial Investigation/Feasibility Study (RI/FS) is to investigate the nature and extent of contamination at the ("Site"), assess the current and potential risk to public health, welfare, and the environment, and to develop and evaluate potential Remedial Action Alternatives. The RI and FS are interactive and shall be conducted concurrently so that the data collected in the RI influences the development of Remedial Action Alternatives in the FS, which in turn affects the data needs and the scope of Treatability Studies.

The Respondents shall conduct the RI/FS and produce an RI/FS Report that is in accordance with this Scope of Work, the Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, (Interim Final) (U.S. EPA Office of Emergency and Remedial Response, October 1988) (the "RI/FS Guidance"), and other guidances used by EPA in conducting an RI/FS (a list of the primary guidances is attached), as well as any additional requirements in the Administrative Order. The RI/FS Guidance describes the report format and the required report content. Pertinent RI/FS Guidance section numbers are denoted in parenthesis throughout this Scope of Work. The Respondents shall furnish all necessary personnel, materials, and services needed, or incidental to, performing the RI/FS, except as otherwise specified in the Administrative Order.

At the completion of the RI/FS, EPA shall be responsible for the selection of a remedy to be implemented for the Site. EPA will document this selection of a remedy in a Record of Decision (ROD). The Remedial Action Alternative selected by EPA will meet the cleanup standards specified in §121 of SARA. That is, the selected remedial action will be protective of human health and the environment, will be cost-effective, will utilize permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable, will be in compliance with, or include a waiver of, applicable or relevant and appropriate requirements of other laws or regulations, and will address the statutory preference for on-site treatment which permanently and significantly reduces the volume, toxicity, or mobility of the hazardous substances, pollutants, and contaminants as a principal element. The Final RI/FS Report, as adopted by EPA, will, with the remainder of the Administrative Record, form the basis for the selection of the remedy to be implemented for the Site and will provide the information necessary to support the development of the ROD.

As specified in §104(a)(1) of CERCLA, as amended by SARA, EPA must provide oversight of the Respondents' activities throughout the RI/FS. The Respondents shall support EPA's initiation and conduct of activities related to the implementation of oversight activities. However, the primary responsibility for conducting an adequate RI/FS to enable and support the selection of a remedy shall lie with the Respondents. EPA review and approval of deliverables is a tool to assist this process and to satisfy, in part, EPA's responsibility to provide effective protection of public health, welfare, and the environment. EPA approval of a task or deliverable shall not be construed as a guarantee as to the ultimate adequacy of such task or deliverable. A summary of the major deliverables that Respondents shall submit for the RI/FS is attached.

TASK 1 - SCOPING (RI/FS Guidance, Chapter 2)

Scoping is the initial planning process of the RI/FS and has been initiated by EPA to determine the site-specific objectives of the RI/FS prior to negotiations between the Respondents and EPA. Scoping is continued, repeated as necessary, and refined throughout the RI/FS process. In addition to developing the Site Objectives of the RI/FS, EPA has developed a Site Management Strategy. Consistent with the Site Management Strategy, the specific project scope shall be planned by the Respondents and EPA. The Respondents shall document the specific project scope in a Work Plan. Because the work required to perform an RI/FS is not fully known at the onset, and is phased in accordance with a Site's complexity and the amount of available information, it may be necessary to modify the Work Plan during the RI/FS to satisfy the objectives of the study.

The Site Objectives for the Firestone Tire & Rubber Company Site have been determined preliminarily, based on available information, to be the following:

1. Review of existing information pertaining to the Site. This includes documents such as EPA Site Inspection Reports, the EPA Hazardous Ranking System Scoring package, reports from local, State and Federal agencies, court records, information from local businesses such as local well drillers and waste haulers and generators, facility records, and information from facility owners and employees and nearby citizens.

2. Review of relevant guidance (see attached references) to understand the remedial process. This information shall be used in performing the RI/FS and preparing all deliverables under this SOW.

3. Identification of all Federal and State applicable or relevant and appropriate requirements (ARARs).

4. Determination of the nature and lateral and vertical extent of contamination (waste types, concentrations and distributions) for all affected media including air, ground water, soil, surface water and sediment, etc.

5. Performance of a well survey within a three mile radius of the Site including determining water uses, general well construction methods used, the general demographics of users, and the volume and rate of water usage.

6. Preparation of a Baseline Risk Assessment including the following four components:

- Contaminant Identification
- Exposure Assessment including a Determination of Actual and Potential Pathways and Receptors
- Toxicity Assessment
- Risk Characterization including:
  - Carcinogenic Risks
  - Noncarcinogenic Risks
  - Environmental Risks to Flora and Fauna (See Task 4)

7. Identification and screening of potential treatment technologies along with containment/disposal requirements for residuals or untreated wastes.

8. Assembly of technologies into Remedial Action Alternatives and screening of alternatives.

9. Performance of bench or pilot Treatability Studies as necessary.

10. Detailed analysis of Remedial Action Alternatives.

The Site Management Strategy for the Firestone Tire & Rubber Company Site includes the following:

1. A complete investigation of the Site including any and all off-site contamination which may have been caused by contaminants originating from the Site.

2. Use of the RI to identify any other Potentially Responsible Parties that may be involved.

3. Evaluation of the Site as a whole, i.e., it is not anticipated at this time that the Site will be partitioned into separate operable units. It is anticipated that only one Record of Decision (ROD) will be prepared for the Site.

4. An expectation that no interim remedial measures are required.

5. EPA oversight of the Respondents' conduct of the work (i.e., the RI/FS and any response action) to ensure compliance with applicable laws, regulations and guidances and to ensure that the work proceeds in a timely fashion.

6. EPA management of the Remedy Selection and Record of Decision phase with input from State Agencies, Natural Resource Trustees and the Public (including the Respondents).

When scoping the specific aspects of a project, the Respondents must meet with EPA to discuss all project planning decisions and special concerns associated with the Site. The following activities shall be performed by the Respondents as a function of the project planning process.

a. Site Background (2.2)

The Respondents shall gather and analyze the existing background information regarding the Site and shall conduct a visit to the Site to assist in planning the scope of the RI/FS.

Collect and Analyze Existing Data and Document the Need for Additional Data (2.2.2; 2.2.6; 2.2.7)

Before planning RI/FS activities, all existing Site data shall be thoroughly compiled and reviewed by the Respondents. Specifically, this shall include currently available data relating to the varieties and quantities of hazardous substances at the Site and past disposal practices (what type of contaminants were dumped where, when, and by whom). This shall also include results from any previous sampling or other investigations that may have been conducted. The Respondents shall refer to Table 2-1 of the RI/FS Guidance for a comprehensive list of data collection information sources. This information shall be utilized in determining additional data needed for Site Characterization, better define potential applicable or relevant and appropriate requirements (ARARs), and develop a

range of preliminarily identified Remedial Action Alternatives. Subject to EPA approval, Data Quality Objectives (DQOs) shall be established that specify the usefulness of existing data. Decisions on the necessary data and DQOs shall be made by EPA.

Conduct Site Visit

The Respondents shall conduct a visit to the Site with the EPA Remedial Project Manager (RPM) during the project scoping phase to assist in developing a conceptual understanding of sources and areas of contamination as well as potential exposure pathways and receptors at the Site. During the visit to the Site the Respondents shall observe the physiography, hydrology, geology, and demographics of the Site as well as related natural resource, ecological and cultural features. This information shall be utilized to better scope the project and to determine the extent of additional data necessary to characterize the Site, better define potential ARARs, and narrow the range of preliminarily identified Remedial Action Alternatives.

b. Project Planning (2.2)

Once the Respondents have collected and analyzed existing data and conducted a visit to the Site, the specific project scope shall be planned. Project planning activities include those tasks described below as well as the development of specific required deliverables as described in paragraph c. The Respondents shall meet with EPA regarding the following activities and before the drafting of the scoping deliverables.

Refine the Site Objectives and Develop Preliminary Remedial Action Objectives and Alternatives (2.2.3)

Once existing information about the Site has been analyzed and a conceptual understanding of the potential risks posed by the Site has been obtained, the Respondents shall review and, if necessary, refine the Site Objectives and develop preliminary remedial action objectives for each actually or potentially contaminated medium. Any revised Site Objectives shall be documented in a technical memorandum and are subject to EPA approval prior to development of the other scoping deliverables. The Respondents shall then identify a preliminary range of broadly defined potential Remedial Action Alternatives and associated technologies. The range of potential alternatives shall include, at a minimum, alternatives in which treatment is used to reduce the toxicity, mobility, or volume of the waste, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are

managed; alternatives that involve containment and treatment components; alternatives that involve containment with little or no treatment; and a no-action alternative.

Document the Need for Treatability Studies (2.2.4)

If remedial actions involving treatment have been identified by the Respondents or EPA, Treatability Studies shall be required except where the Respondents can demonstrate to EPA's satisfaction that they are not needed. Where Treatability Studies are needed, initial Treatability Study activities (such as research and study design) shall be planned to occur concurrently with Site Characterization activities (see Tasks 3 and 5).

Begin Preliminary Identification of Potential ARARs (2.2.5)

The Respondents shall conduct a preliminary identification of potential State and Federal ARARs (chemical-specific, location-specific and action-specific) to assist in the refinement of remedial action objectives and the initial identification of Remedial Action Alternatives and ARARs associated with particular actions. ARAR identification shall continue as conditions and contaminants at the Site and Remedial Action Alternatives are better defined.

c. Scoping Deliverables (2.3)

At the conclusion of the project planning phase, the Respondents shall submit an RI.FS Scoping Document. The Scoping Document will reviewed by the EPA. Following the Scoping Document, the Respondents shall submit an RI/FS Work Plan, a Sampling and Analysis Plan, and a Health and Safety Plan. The RI/FS Work Plan and Sampling and Analysis Plan must be reviewed and approved and the Health and Safety Plan reviewed by EPA prior to the initiation of field activities.

RI/FS Scoping Document

A Scoping Document, summarizing results of all prior field activites and remedial measures shall be submitted to EPA for review. The Scoping Document shall include a description of the wirk performed, the media investigated, field and laboratory test results and conclusions. Laboratory test data shall be supported by laboratory QA/QC summary reports.

RI/FS Work Plan (2.3.1)

A Work Plan documenting the decisions and evaluations completed during the scoping process shall be submitted to EPA for review and approval. The Work Plan shall be developed in conjunction with the Sampling and Analysis Plan and the Health and Safety Plan, although each plan may be delivered under separate cover. The Work Plan shall

include a comprehensive description of the work to be performed, the medias to be investigated (i.e., Air, Ground Water, Surface Water, Surface and Subsurface Soils and Sediments, etc.), the methodologies to be utilized and the rationale for the selection of each methodology. A comprehensive schedule for completion of each major activity and submission of each deliverable shall also be included.

Specifically, the Work Plan shall present the following:

- A statement of the problem(s) and potential problem(s) posed by the Site and the objectives of the RI/FS.

- A background summary setting forth the following:

  - a description of the Site including the geographic location, and, to the extent possible, a description of the physiography, hydrology, geology, demographics, ecological, cultural and natural resource features of the Site;

  - a synopsis of the history of the Site including a summary of past disposal practices and a description of previous responses that have been conducted by local, State, Federal, or private parties at the Site;

  - a summary of the existing data in terms of physical and chemical characteristics of the contaminants identified and their distribution among the environmental media at the Site.

- A conceptual "model" describing the contaminant sources and a preliminary risk analysis assessing potential migration and exposure pathways and receptors (both human and environmental).

- A description of the Site Management Strategy developed by EPA during scoping as discussed previously in this SOW and as may be modified with EPA's approval;

- A preliminary identification of Remedial Action Alternatives and data needs for evaluation of Remedial Action Alternatives. This shall reflect coordination with Treatability Study requirements (see Tasks 1 and 5).

- A process for identifying Federal and State ARARs (chemical-specific, location-specific and action-specific).

- A detailed description of the tasks to be performed, information needed for each task (e.g., for health and environmental risk evaluation), information to be produced during and at the conclusion of each task, and a description of the work products that shall be submitted to EPA. This includes the deliverables set forth in the remainder of this Scope of Work.

- A schedule for each of the required activities which is consistent with the RI/FS Guidance.

- A project management plan, including a data management plan (e.g., requirements for project management systems and software, minimum data requirements, data format and backup data management), monthly reports to EPA, and meetings and presentations to EPA at the conclusion of each major phase of the RI/FS.

The Respondents shall refer to Appendix B of the RI/FS Guidance for a comprehensive description of the contents of the required Work Plan.

Because of the unknown nature of the Site and iterative nature of the RI/FS, additional data requirements may be identified throughout the RI/FS process. The Respondents shall submit a technical memorandum documenting any need for additional data along with the proposed DQOs whenever such requirements are identified. In any event, the Respondents are responsible for fulfilling additional data and analysis needs identified by EPA consistent with the general scope and objectives of this RI/FS and the Administrative Order.

Sampling and Analysis Plan (2.3.2)

The Respondents shall prepare a Sampling and Analysis Plan (SAP) to ensure that sample collection and analytical activities are conducted in accordance with technically acceptable protocols and that the data generated will meet the DQOs established. The SAP provides a mechanism for planning field activities and consists of a Field Sampling and Analysis Plan (FSAP) and a Quality Assurance Project Plan (QAPP).

The FSAP shall define in detail the sampling and data-gathering methods that shall be used on the project. It shall include sampling objectives, sample location (horizontal and vertical) and frequency, sampling equipment procedures, and sample handling and analysis. The DQOs will, at a minimum, reflect use of analytical methods for identifying contamination and addressing contamination consistent with the levels forand. The QAPP shall describe the project objectives and organization, functional activities, and quality assurance and quality control (QA/QC) protocols that shall be used to achieve the desired DQOs.

remedial action objectives identified in the proposed National Contingency Plan, pages 51425-26 and 51433 (December 21, 1988). In addition, the QAPP shall address personnel qualifications, sampling procedures, sample custody, analytical procedures, and data reduction, validation, and reporting. These procedures must be consistent with the Region IV Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual. Field personnel shall be available for EPA QA/QC training and orientation as may be required.

The Respondents shall demonstrate, in advance and to EPA's satisfaction, that each laboratory it may use is qualified to conduct the proposed work. This includes use of methods and analytical protocols for the chemicals of concern (typically the Target Compound List (TCL) and the Target Analyte List (TAL)) in the media of interest within detection and quantification limits consistent with both QA/QC procedures and DQOs approved by EPA in the QAPP for the Site. The laboratory must have and follow an approved QA program. The Respondents shall provide assurances that EPA has access to laboratory personnel, equipment and records for sample collection, transportation and analysis. EPA may require that the Respondents submit detailed information to demonstrate that the laboratory is qualified to conduct the work, including information on personnel qualifications, equipment and material specifications. In addition, EPA may require submittal of data packages equivalent to those generated in the EPA Contract Laboratory Program (CLP) and may require laboratory analysis of performance samples (blank and/or spike samples) in sufficient number to determine the capabilities of the laboratory. If a laboratory not in the CLP is selected, methods consistent with CLP methods that would be used at this Site for the purposes proposed and QA/QC procedures approved by EPA shall be used. In addition, if the laboratory is not in the CLP program, a laboratory QA program must be submitted for EPA review and approval.

Health and Safety Plan (2.3.3)

A Health and Safety Plan shall be prepared in conformance with the Respondents' health and safety program, and in compliance with OSHA regulations and protocols. The Health and Safety Plan shall include the eleven elements described in the RI/FS Guidance, such as a health and safety risk analysis, a description of monitoring and personal protective equipment, medical monitoring, and site control. It should be noted that EPA does not "approve"

the Respondents' Health and Safety Plan, but rather EPA reviews it to ensure that all necessary elements are included, and that the plan provides for the protection of human health and the environment.

TASK 2 - COMMUNITY RELATIONS (2.3.4)

The development and implementation of community relations activities are the responsibility of EPA. The critical community relations planning steps performed by EPA include conducting community interviews and developing a community relations plan. Although implementation of the community relations plan is the responsibility of EPA, the Respondents may be requested to assist by providing information regarding the history of the Site and participating in public meetings. The extent of the Respondents' involvement in community relations activities is left to the discretion of EPA. The Respondents' community relations responsibilities, if any, shall be specified in the community relations plan. All community relations activities conducted by Respondents shall be subject to oversight by EPA.

TASK 3 - SITE CHARACTERIZATION (RI/FS Guidance, Chapter 3)

As part of the RI, the Respondents shall perform the activities described in this task, including the preparation of a Site Characterization Summary and a RI Report. The overall objective of Site Characterization is to describe areas of the Site that may pose a threat to human health or the environment. This is accomplished by first determining physiography, geology, and hydrology of the Site. Surface and subsurface pathways of migration shall be defined. The Respondents shall identify the sources of contamination and define the nature, extent, and volume of the sources of contamination, including their physical and chemical constituents as well as their concentrations at incremental locations in the affected media. The Respondents shall also investigate the extent of migration of this contamination as well as its volume and any changes in its physical or chemical characteristics. This will provide for a comprehensive understanding of the nature and extent of contamination at the Site. Using this information, contaminant fate and transport shall be determined and projected.

During this phase of the RI/FS, the Work Plan, SAP, and Health and Safety Plan shall be implemented. Field data shall be collected and analyzed to provide the information required to accomplish the objectives of the study. The Respondents shall notify EPA at least two weeks in advance of the field work regarding the planned dates for field activities, including installation of monitoring wells, installation and calibration

of equipment, pump tests, field lay out of any sampling grid, excavation, sampling and analysis activities, and other field investigation activities. The Respondents shall demonstrate that the laboratory and type of laboratory analyses that will be utilized during Site Characterization meets the specific QA/QC requirements and the DQOs as specified in the SAP. In view of the unknown conditions at the Site, activities are often iterative and, to satisfy the objectives of the RI/FS, it may be necessary for the Respondents to supplement the work specified in the initial Work Plan. In addition to the deliverables below, the Respondents shall provide a monthly progress report and participate in meetings at major points in the RI/FS.

a. Field Investigation (3.2)

The field investigation includes the gathering of data to define physical characteristics, sources of contamination, and the nature and extent of contamination at the Site. These activities shall be performed by the Respondents in accordance with the Work Plan and SAP. At a minimum, this shall include the following activities:

Implementing and Documenting Field Support Activities (3.2.1)

The Respondents shall initiate field support activities following approval of the Work Plan and SAP. Field support activities may include obtaining access to the Site, property surveys, scheduling, and procuring equipment, office space, laboratory services, utility services and/or contractors. The Respondents shall notify EPA at least two weeks prior to initiating field support activities so that EPA may adequately schedule oversight tasks. The Respondents shall also notify EPA in writing upon completion of field support activities.

Investigating and Defining Site Physical Characteristics (3.2.2)

The Respondents shall collect data on the physical characteristics of the Site and its surrounding areas including the physiography, geology, and hydrology, and specific physical characteristics identified in the Work Plan. This information shall be ascertained through a combination of physical measurements, observations, and sampling efforts and shall be utilized to define potential transport pathways and receptor populations. In defining the physical characteristics of the Site, the Respondents shall also obtain sufficient engineering data (such as pumping characteristics, soil particle size, permeability, etc.) for the projection of contaminant fate and transport and the development and screening of Remedial Action Alternatives, including information necessary to evaluate treatment technologies.

Defining Sources of Contamination (3.2.3)

The Respondents shall locate or describe each source of contamination. For each location, the lateral and vertical extent of contamination shall be determined by sampling at incremental depths on a sampling grid or in another organized fashion approved by EPA. The physical characteristics and chemical constituents and their concentrations shall be determined for all known and discovered sources of contamination. The Respondents shall conduct sufficient sampling to define the boundaries of the contaminant sources to the level established in the QA/QC plan and DQOs. Sources of contamination shall be analyzed for the potential of contaminant release (e.g., long term leaching from soil), contaminant mobility and persistence, and characteristics important for evaluating remedial actions, including information necessary to evaluate treatment technologies.

Describing the Nature and Extent of Contamination (3.2.4)

The Respondents shall gather information to describe the nature and extent of contamination as a final step during the field investigation. To describe the nature and extent of contamination, the Respondents shall utilize the information on Site physical characteristics and sources of contamination to give a preliminary estimate of the contaminants that may have migrated. The Respondents shall then implement an iterative monitoring program and any study program identified in the Work Plan or SAP such that, by using analytical techniques sufficient to detect and quantify the concentration of contaminants, the migration of contaminants through the various media at the Site can be determined. In addition, the Respondents shall gather data for calculations of contaminant fate and transport. This process is continued until the lateral and vertical extent of contamination has been determined. Information on the nature and extent of contamination shall be utilized to determine the level of risk presented by the Site and will help to determine aspects of the appropriate Remedial Action Alternatives to be evaluated.

b. Data Analyses (3.4)

Evaluate Site Characteristics (3.4.1)

The Respondents shall analyze and evaluate the data to describe; (1) physical characteristics of the Site, (2) contaminant source characteristics, (3) nature and extent of contamination, and (4) contaminant fate and transport. The information on physical characteristics, source characteristics, and nature and extent of contamination is

used in the analysis of contaminant fate and transport. The evaluation shall include the actual and potential magnitude of releases from the sources and lateral and vertical spread of contamination as well as mobility and persistence of contaminants. Where modeling is appropriate, such models shall be identified to EPA in a technical memorandum prior to their use. All data and programming, including any proprietary programs, shall be made available to EPA together with a sensitivity analysis. All models shall be approved by EPA prior to their use. Also, this evaluation shall provide any information relevant to characteristics for the Site necessary for evaluation of the need for remedial action in the Baseline Risk Assessment, the development and evaluation of Remedial Action Alternatives, and the refinement and identification of ARARs. Analyses of data collected for Site Characterization shall meet the DQOs developed in the QAPP.

c. Data Management Procedures (3.5)

The Respondents shall consistently document the quality and validity of field and laboratory data compiled during the RI. At a minimum, this shall include the following activities:

Documenting Field Activities (3.5.1)

Information gathered during characterization of the Site shall be consistently documented and adequately recorded by the Respondents in well maintained field logs and laboratory reports. The method(s) of documentation must be specified in the Work Plan and/or the SAP. Field logs must be utilized to document observations, calibrations, measurements, and significant events that have occurred during field activities. Laboratory reports must document sample custody, analytical responsibility, analytical results, adherence to prescribed protocols, nonconformity events, corrective measures, and/or data deficiencies. Supporting documentation described as the "CLP Data Package" must be provided with the sample analysis for all samples split or duplicated with EPA.

Maintaining Sample Management and Tracking (3.5.2; 3.5.3)

The Respondents shall maintain field reports, sample shipment records, analytical results, and QA/QC reports to ensure that only validated analytical data are reported and utilized in the development and evaluation of the Baseline Risk Assessment and Remedial Action Alternatives. Analytical results developed under the Work Plan shall not be included in any characterization reports for the Site unless accompanied by or cross-referenced to a corresponding QA/QC report. In addition, the Respondents

shall establish a data security system to safeguard chain-of-custody forms and other project records to prevent loss, damage, or alteration of project documentation.

d. Site Characterization Deliverables (3.7)

The Respondents shall prepare the Preliminary Site Characterization Summary and, once the Baseline Risk Assessment (Task 4) is complete, the Draft Remedial Investigation Report.

Preliminary Site Characterization Summary (3.7.2)

After completing field sampling and analysis, the Respondents shall prepare a concise Site Characterization Summary. This summary shall review the investigative activities that have taken place, and to the extent approved by EPA, information contained in the scoping document shall describe and display data for the Site documenting the location and characteristics of surface and subsurface features and contamination at the Site including the affected medium, location, types, physical state, concentration of contaminants and quantity. In addition, the location, dimensions, physical condition and varying concentrations of each contaminant throughout each source and the extent of contaminant migration through each of the affected media shall be documented. The Site Characterization Summary shall provide EPA with a preliminary reference for developing the Baseline Risk Assessment, evaluating the development and screening of Remedial Action Alternatives, and the refinement and identification of ARARs.

Remedial Investigation (RI) Report (3.7.3)

The Respondents shall prepare and submit a Draft RI Report to EPA for review and approval after completion of the Baseline Risk Assessment (see Task 4). This report shall summarize results of field activities to characterize the Site, sources of contamination, nature and extent of contamination, the fate and transport of contaminants, and results of the Baseline Risk Assessment. The Respondents shall refer to the RI/FS Guidance for an outline of the report format and contents. Following comment by EPA, the Respondents shall prepare a Final RI Report which satisfactorily addresses EPA's comments.

TASK 4 - BASELINE RISK ASSESSMENT (3.4.2)

A Baseline Risk Assessment shall identify and characterize the toxicity and levels of hazardous substances present, contaminant fate and transport, the potential for human and environmental exposure, and the risk of potential impacts or threats on human health and the environment (including both flora and fauna) resulting from site-related contaminants. It will provide the basis for determining whether or not remedial action is necessary and a justification for performing any

remedial action that may be required. The procedures to perform a Baseline Risk Assessment for human health are outlined in EPA's Superfund Public Health Evaluation Manual (SPHEM). These procedures are outlined below and must be followed by the Respondents. Other resources that the Respondents must utilize when performing the Baseline Risk Assessment include; EPA's Superfund Exposure Assessment Manual (SEAM), the Integrated Risk Information System (IRIS), the Public Health Risk Evaluation Database (PHRED) or other similar databases, and the Interim Final Risk Assessment Guidance for Superfund - Environmental Evaluation Manual.

a. Human Health and Risk Assessment Components

The Risk Assessment process is divided into the four components listed below. During the scoping of the Baseline Risk Assessment, the Respondents shall discuss with EPA the format of the Baseline Risk Assessment Report as well as the references to be utilized during the Baseline Risk Assessment.

Contaminant Identification and Documentation

The Respondents shall review the information that is available on the hazardous substances present at the Site and shall identify the contaminants of concern. The contaminants of concern, also known as indicator chemicals, are not chosen solely on the basis of chemical-specific ARARs. Rather, they are selected based on quantity, the concentration of contaminants on-site as compared to levels that pose a risk, relative toxicity, and critical exposure pathways, such as drinking water. The Respondents shall submit to EPA for review and approval a technical memorandum listing all the hazardous substances present at the Site and the indicator chemicals with the known corresponding ambient concentrations of these contaminants. The data shall be tabulated to show the frequency of detection, the arithmetic mean and range of concentrations, and the sample collection date(s). In calculating the arithmetic mean, a chemical not detected in a sample shall be assumed to be present at a concentration of one-half its respective quantification limit as set forth in the QAPP. Chemical-specific ARARs shall also be identified at this time.

Exposure Assessment and Documentation

Using the information in the SEAM, the Respondents shall identify actual and potential exposure points and pathways. Exposure assumptions must be supported with validated data and must be consistent with Agency policy. Validation of data that has not previously undergone Agency review may be conducted as long as it does not delay the RI/FS schedule. For each exposure point, the release

source, the transport media (e.g., ground water, surface water, air, etc.) and the exposure route (oral, inhalation, dermal) must be clearly delineated. The current number of people at each exposure point must be estimated and both sensitive and potentially exposed populations must be characterized. Both present and future risks at the Site must be considered and both current and maximum reasonable use scenarios weighed. The Respondents shall submit to EPA for review and approval a technical memorandum describing the exposure scenarios with a description of the assumptions made and the use of data. In addition, the Respondents shall include a description of the fate and transport models that will be utilized, including a summary of the data that will be used with these models. Representative data must be utilized and the limitations and uncertainties associated with the models employed must be documented.

Toxicity Assessment and Documentation

The Respondents shall utilize the information in IRIS, PHRED, other similar data bases and other information sources to provide a toxicity assessment of the indicator chemicals. This assessment shall include the types of adverse health and/or environmental effects associated with chemical exposures (including potential carcinogenicity), the relationships between magnitude of exposures and adverse effects, and the related uncertainties of contaminant toxicity (e.g., the weight of evidence for a chemical's carcinogenicity).

Risk Characterization

The Respondents shall integrate the ambient concentrations and reasonable worst case assumptions with the information developed during the exposure and toxicity assessments to characterize the current and potential risks to human health and the environment posed by the Site. This risk characterization must identify any uncertainties associated with contaminants, toxicities, and exposure assumptions.

b. Environmental Evaluation

In addition to the Baseline Risk Assessment for human health, the risks to the environment from exposure to the contaminants must be addressed. A technical memorandum providing an environmental evaluation shall be submitted to EPA for review and approval. At a minimum, the environmental evaluation shall include an assessment of any critical habitats and any endangered species or habitats of endangered species affected by contamination at the Site. It shall also provide the information necessary to adequately characterize the nature and extent of environmental risk or threat resulting from the Site.

The Respondents shall utilize the Interim Final Risk Assessment Guidance for Superfund - Environmental Evaluation Manual in preparing the environmental evaluation.

c. Baseline Risk Assessment Deliverables

The Respondents are required to prepare the three technical memoranda listed in Tasks 4a and 4b of this SOW. The three technical memoranda may be combined or submitted jointly. The Final Baseline Risk Assessment Report shall be submitted at the completion of Site Characterization and included in the Draft RI Report (see Task 3).

Baseline Risk Assessment Chapter of the RI Report

The Baseline Risk Assessment Report shall be included in the RI Report and submitted to EPA for review and approval. The report shall include a comprehensive description of the four components of the Baseline Risk Assessment and shall follow the principles established in the SPHEM. A discussion of sources of uncertainty, data gaps, incomplete toxicity information, and modeling characteristics must be included. The Respondents shall refer to the SPHEM for an outline of the report format. In addition, the Environmental Evaluation must be included in this chapter.

TASK 5 - TREATABILITY STUDIES (RI/FS Guidance, Chapter 5)

Treatability Studies shall be performed by the Respondents to assist in the detailed analysis of alternatives. In addition, if applicable, study results and operating conditions will later be used in the detailed design of the selected remedial technology. The following activities shall be performed by the Respondents.

a. Determination of Candidate Technologies and the Need for Treatability Studies (5.2; 5.4)

The Respondents shall identify in a technical memorandum, subject to EPA review and comment, candidate technologies for a Treatability Studies program during project planning (Task 1). The listing of candidate technologies shall cover the range of technologies required for alternatives analysis (Task 6a). The specific data requirements for the Treatability Studies program shall be determined and refined during Site Characterization and the development and screening of Remedial Action Alternatives (Tasks 2 and 6, respectively).

Conduct Literature Survey and Determine the Need for Treatability Studies (5.2)

The Respondents shall conduct a literature survey to gather information on performance, relative costs, applicability, removal efficiencies, operation and maintenance (O&M) requirements, and implementability of candidate technologies. If practical candidate technologies have not been sufficiently demonstrated, or cannot be adequately evaluated for the Site on the basis of available information, Treatability Studies shall be conducted. The determination regarding the necessity for Treatability Studies shall lie with EPA.

Evaluate Treatability Studies (5.4)

Where EPA has determined that Treatability Studies are required, the Respondents and EPA shall decide on the type of Treatability Studies to use (e.g., bench versus pilot). Because of the time required to design, fabricate, and install pilot scale equipment as well as to perform testing for various operating conditions, the decision to perform pilot testing shall be made as early in the process as possible to minimize potential delays of the FS. To assure that a Treatability Study program is completed on time, and with accurate results, the Respondents shall either submit a separate Treatability Study Work Plan or an amendment to the original RI/FS Work Plan for EPA review and approval.

b. Treatability Study Deliverables (5.5; 5.6; 5.8)

In addition to the memorandum identifying candidate technologies, the deliverables that are required when Treatability Studies are to be conducted include a Treatability Study Work Plan, a Treatability Study Sampling and Analysis Plan, and a Final Treatability Study Evaluation Report. EPA may also require a Treatability Study Health and Safety Plan, where appropriate.

Treatability Study Work Plan (5.5)

The Respondents shall prepare a Treatability Study Work Plan or amendment to the original RI/FS Work Plan for EPA review and approval. This Plan shall describe the background of the Site, remedial technologies to be tested, test objectives, experimental procedures, treatability conditions to be tested, measurements of performance, analytical methods, data management and analysis, health and safety, and residual waste management. The DQOs for Treatability Studies shall be documented as well. If pilot-scale Treatability Studies are to be performed, the Treatability Study Work Plan shall describe pilot plant installation and start-up, pilot plant operation and

maintenance procedures, and operating conditions to be tested. If testing is to be performed off-site, permitting requirements must be addressed.

Treatability Study Sampling and Analysis Plan (5.5)

If the original QAPP or FSAP is not adequate for defining the activities to be performed during the Treatability Studies, a separate Treatability Study SAP or amendment to the original RI/FS SAP shall be prepared by the Respondents for EPA review and approval. It shall be designed to monitor pilot plant performance. Task 1c of this Scope of Work provides additional information on the requirements of the SAP.

Treatability Study Health and Safety Plan (5.5)

If the original RI/FS Health and Safety Plan is not adequate for defining the activities to be performed during the Treatability Studies, a separate or amended Health and Safety Plan shall be developed by the Respondents. Task 1c of this Scope of Work provides additional information on the requirements of the Health and Safety Plan. EPA does not "approve" the Treatability Study Health and Safety Plan.

Treatability Study Evaluation Report (5.6)

Following completion of Treatability Studies, the Respondents shall analyze and interpret the testing results in a technical report to EPA. Depending on the sequence of activities, this report may be a part of the RI/FS Report. or a separate deliverable. The report shall evaluate each technology's effectiveness, implementability, cost, and actual results as compared with predicted results. The report shall also evaluate full-scale application of the technology, including a sensitivity analysis identifying the key parameters affecting full-scale operation.

TASK 6 - DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES (RI/FS Guidance, Chapter 4)

The development and screening of Remedial Action Alternatives is performed to select an appropriate range of waste management options to be evaluated. This range of options shall include, at a minimum, alternatives in which treatment is used to reduce the toxicity, mobility, or volume of the waste, but varying in the types of treatment, the amount treated, and the manner in which long-term residuals or untreated wastes are managed; alternatives that involve containment and treatment components; alternatives that involve containment with little or no treatment; and a no-action alternative. The following activities shall be performed by the Respondents as a function

of the development and screening of Remedial Action Alternatives.

a. Development and Screening of Remedial Action Alternatives (4.2)

The Respondents shall begin to develop and evaluate, concurrent with the RI Site Characterization task, a range of appropriate waste management options that, at a minimum, ensure protection of human health and the environment and comply with all ARARs.

Refine and Document Remedial Action Objectives (4.2.1)

The Respondents shall review and, if necessary, propose refinement to the Site Objectives and preliminary remedial action objectives that were established during the Scoping phase (Task 1). Any revised Site Objectives or revised remedial action objectives shall be documented in a technical memorandum as discussed in Task 1b. These objectives shall specify the contaminants and media of interest, exposure pathways and receptors, and an acceptable contaminant level or range of levels (at particular locations for each exposure route).

Develop General Response Actions (4.2.2)

The Respondents shall develop general response actions for each medium of interest defining containment, treatment, excavation, pumping, or other actions, singly or in combination, to satisfy the remedial action objectives.

Identify Areas and Volumes of Media (4.2.3)

The Respondents shall identify areas and volumes of media to which general response actions may apply, taking into account requirements for protectiveness as identified in the remedial action objectives. The chemical and physical characterization of the Site and the Baseline Risk Assessment shall also be taken into account.

Identify, Screen, and Document Remedial Technologies (4.2.4; 4.2.5)

The Respondents shall identify and evaluate technologies applicable to each general response action to eliminate those that cannot be implemented at the Site. General response actions shall be refined to specify remedial technology types. Technology process options for each of the technology types shall be identified either concurrent with the identification of technology types or following the screening of the considered technology types. Process options shall be evaluated on the basis of effectiveness, implementability, and cost factors to select and retain one

or, if necessary, more representative processes for each technology type. The technology types and process options shall be summarized for inclusion in a technical memorandum. The reasons for eliminating alternatives must be specified.

Assemble and Document Alternatives (4.2.6)

The Respondents shall assemble selected representative technologies into alternatives for each affected medium or operable unit. Together, all of the alternatives shall represent a range of treatment and containment combinations that shall address either the Site or the operable unit as a whole. A summary of the assembled alternatives and their related action-specific ARARs shall be prepared by the Respondents for inclusion in a technical memorandum. The reasons for eliminating alternatives during the preliminary screening process must be specified.

Refine Alternatives

The Respondents shall refine the Remedial Action Alternatives to identify contaminant volumes to be addressed by the proposed process and sizing of critical unit operations as necessary. Sufficient information shall be collected for an adequate comparison of alternatives. Remedial action objectives for each medium shall also be refined as necessary to incorporate any new risk assessment information being generated from the Remedial Investigation. Additionally, action-specific ARARs shall be updated as the Remedial Action Alternatives are refined.

Conduct and Document Screening Evaluation of Each Alternative (4.3)

The Respondents may perform a final screening process based on short and long term aspects of effectiveness, implementability, and relative cost. Generally, this screening process is only necessary when there are many feasible alternatives available for detailed analysis. If necessary, the screening of alternatives shall be conducted to assure that only the alternatives with the most favorable composite evaluation of all factors are retained for further analysis.

As appropriate, the screening shall preserve the range of treatment and containment alternatives that was initially developed. The range of remaining alternatives shall include options that use treatment technologies and permanent solutions to the maximum extent practicable. The Respondents shall prepare a technical memorandum summarizing the results and reasoning employed in screening, arraying alternatives that remain after

screening, and identifying the action-specific ARARs for the alternatives that remain after screening.

b. Alternatives Development and Screening Deliverables (4.5)

The Respondents shall prepare a technical memorandum summarizing the work performed and the results of each task above, including an alternatives array summary. These shall be modified by the Respondents if required by EPA's comments to assure identification of a complete and appropriate range of viable alternatives to be considered in the detailed analysis. This deliverable shall document the methods, rationale, and results of the alternatives screening process.

TASK 7 - DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES (RI/FS Guidance, Chapter 6)

The detailed analysis shall be conducted by the Respondents to provide EPA with the information needed to allow for the selection of a remedy for the Site. This analysis is the final task to be performed by the Respondents during the FS.

a. Detailed Analysis of Alternatives (6.2)

The Respondents shall conduct a detailed analysis of remaining alternatives. This analysis shall consist of an assessment of each option against a set of nine evaluation criteria and a comparative review of all options using the same nine evaluation criteria as a basis for comparison.

Apply Nine Criteria and Document Analysis (6.2.1 - 6.2.4).

The Respondents shall apply seven of the nine evaluation criteria to the assembled Remedial Action Alternatives to ensure that the selected Remedial Action Alternative will be protective of human health and the environment; will be in compliance with, or include a waiver of, ARARs; will be cost-effective; will utilize permanent solutions and alternative treatment technologies, or resource recovery technologies, to the maximum extent practicable; and will address the statutory preference for treatment as a principal element. The evaluation criteria include: (1) overall protection of human health and the environment; (2) compliance with ARARs; (3) long-term effectiveness and permanence; (4) reduction of toxicity, mobility, or volume; (5) short-term effectiveness; (6) implementability; (7) cost; (8) State acceptance; and (9) community acceptance. Criteria 8 and 9 will be considered by the EPA after the RI/FS Report has been released to the general public. For each alternative, the Respondents shall provide: (1) a description of the alternative that outlines the waste management strategy involved and identifies the key ARARs associated with each alternative, and (2) a discussion of the individual

criterion assessment. Since the Respondents do not have direct input on criteria (8) State acceptance and (9) community acceptance, these will be addressed by EPA after completion of the Draft FS Report.

Compare Alternatives Against Each Other and Document the Comparison of Alternatives (6.2.5; 6.2.6)

The Respondents shall perform a comparative analysis among the Remedial Action Alternatives. That is, each alternative shall be compared against the others using the nine evaluation criteria as a basis of comparison. No alternative shall be identified by Respondents as the preferred alternative in the Feasibility Study. Identification and selection of the preferred alternative is conducted by EPA.

b. Detailed Analysis Deliverables (6.5)

The Respondents shall prepare a Draft FS Report for EPA review and comment. This report, as ultimately adopted or amended by EPA, provides a basis for remedy selection by EPA and documents the development and analysis of Remedial Action Alternatives. The Respondents shall refer to the RI/FS Guidance for an outline of the report format and the required report content. The Respondents shall prepare a Final FS Report which satisfactorily addresses EPA's comments. Once EPA's comments have been addressed by the Respondents to EPA's satisfaction and EPA approval has been obtained or an amendment has been furnished by EPA, the Final FS Report may be bound with the Final RI Report.

REFERENCES

The following list, although not comprehensive, comprises many of the regulations and guidance documents that apply to the RI/FS process:

1. The Proposed National Contingency Plan.

2. "Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final" U.S. EPA, Office of Emergency and Remedial Response, October 1988, OSWER Directive No. 9355.3-01.

3. "Interim Guidance on Potentially Responsible Party Participation in Remedial Investigation and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, Appendix A to OSWER Directive No. 9355.3-01.

4. "Guidance on Oversight of Potentially Responsible Party Remedial Investigations and Feasibility Studies," U.S. EPA, Office of Waste Programs Enforcement, (forthcoming), OSWER Directive No. 9835.3.

5. "A Compendium of Superfund Field Operations Methods," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, EPA/540/P-87/001a, August 1987, OSWER Directive No. 9355.0-14.

6. "EPA NEIC Policies and Procedures Manual," May 1978, revised November 1984, EPA-330/9-78-001-R.

7. "Data Quality Objectives for Remedial Response Activities," U.S. EPA, Office of Emergency and Remedial Response and Office of Waste Programs Enforcement, EPA/540/G-87/003, March 1987, OSWER Directive No. 9335.0-7B.

8. "Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Research and Development, Cincinnati, OH, QAMS-004/80, December 29, 1980.

9. "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," U.S. EPA, Office of Emergency and Remedial Response, QAMS-005/80, December 1980.

10. "Users Guide to the EPA Contract Laboratory Program," U.S. EPA, Sample Management Office, August 1982.

11. "Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements," U.S. EPA, Office of Emergency and Remedial Response, July 9, 1987, OSWER Directive No. 9234.0-05.

12. "CERCLA Compliance with Other Laws Manual," Two Volumes, U.S. EPA, Office of Emergency and Remedial Response, August 1988 (Draft), OSWER Directive No. 9234.1-01 and -02.

13. "Guidance on Remedial Actions for Contaminated Ground Water at Superfund Sites," U.S. EPA, Office of Emergency and Remedial Response, (Draft), OSWER Directive No. 9283.1-2.

14. "Draft Guidance on Preparing Superfund Decision Documents," U.S. EPA, Office of Emergency and Remedial Response, March 1988, OSWER Directive No. 9355.3-02

15. "Superfund Public Health Evaluation Manual," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-86/060, October 1986, OSWER Directive No. 9285.4-1.

16. "Superfund Exposure Assessment Manual," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-88/001, April 1988, OSWER Directive No. 9285.5-1.

17. "Interim Final Risk Assessment Guidance for Superfund - Environmental Evaluation Manual," U.S. EPA, Office of Emergency and Remedial Response, EPA/540/1-89/001, March 1989, OSWER Directive No. 9285.7-01.

18. "Health and Safety Requirements of Employees Employed in Field Activities," U.S. EPA, Office of Emergency and Remedial Response, July 12, 1981, EPA Order No. 1440.2.

19. OSHA Regulations in 29 CFR 1910.120 (Federal Register 45654, December 19, 1986).

20. "Interim Guidance on Administrative Records for Selection of CERCLA Response Actions," U.S. EPA, Office of Waste Programs Enforcement, March 1, 1989, OSWER Directive No. 9833.3A.

21. "Community Relations in Superfund: A Handbook," U.S. EPA, Office of Emergency and Remedial Response, June 1988, OSWER Directive No. 9230.0-3B.

22. "Community Relations During Enforcement Activities And Development of the Administrative Record," U.S. EPA, Office of Waste Programs Enforcement, November 1988, OSWER Directive No. 9836.0-1A.

23. "Engineering Support Branch Standard Operating Procedures and Quality Assurance Manual", U.S. EPA Region IV, Environmental Services Division, April 1, 1986, (revised periodically).

24. "USEPA Contract Laboratory Program Statement of Work for Organics Analysis", U.S. EPA, Office of Emergency and Remedial Response, February 1988.

25. "USEPA Contract Laboratory Program Statement of Work for Inorganics Analysis", U.S. EPA, Office of Emergency and Remedial Response, July 1988.

SUMMARY OF THE MAJOR DELIVERABLES FOR THE REMEDIAL INVESTIGATION AND FEASIBILITY STUDY AT THE FIRESTONE TIRE & RUBBER Co. SITE

TASK	DELIVERABLE	EPA RESPONSE
TASK 1	SCOPING	
	- RI/FS Work Plan (15)	Review and Approve
	- Field Sampling and Analysis Plan (15)	Review and Approve
	- Quality Assurance Project Plan (5)	Review and Approve
	- Site Health and Safety Plan (5)	Review and Comment
TASK 3	SITE CHARACTERIZATION	
	- Technical Memorandum on Modeling of Site Characteristics (where appropriate) (5)	Review and Approve
	- Preliminary Site Characterization Summary (15)	Review and Comment
	- Draft Remedial Investigation (RI) Report (15)	Review and Approve
TASK 4	BASELINE RISK ASSESSMENT	
	- Technical Memorandum Listing Hazardous Substances and Indicator Chemicals (5)	Review and Approve
	- Technical Memorandum Describing Exposure Scenarios and Fate and Transport Models (5)	Review and Approve
	- Technical Memorandum Providing an Environmental Evaluation (5)	Review and Approve

	- Baseline Risk Assessment Chapter of the RI Report (5)	Review and Approve
TASK 5	TREATABILITY STUDIES	
	- Technical Memorandum Identifying Candidate Technologies (10)	Review and Comment
	- Treatability Study Work Plan (or amendment to original Work Plan) (10)	Review and Approve
	- Treatability Study SAP (or amendment to original SAP) (10)	Review and Approve
	- Treatability Study Evaluation Report (10)	Review and Approve
TASK 6	DEVELOPMENT AND SCREENING OF REMEDIAL ACTION ALTERNATIVES	
	- Technical Memorandum Documenting Revised Remedial Action Objectives (5)	Review and Approve
	- Technical Memorandum on Remedial Technologies, Alternatives, and Screening (5)	Review and Comment
TASK 7	DETAILED ANALYSIS OF REMEDIAL ACTION ALTERNATIVES	
	- Draft Feasibility Study (FS) Report (15)	Review and Approve

Note: The number in parenthesis indicates the number of copies to be submitted by Respondents. One copy shall be unbound, the remainder shall be bound.